ENVIRONMENTAL PRODUCT DECLARATION

ISOLIMPIA®
Thermo-acoustic insulation in polyester

EPD® based on PCR 2012: 01 Construction products and construction services v. 2.3 and the Sub-PCR-I Thermal insulation products

EPD® Registration number: S-P-01627
Publication date: 05/07/2019
End Validity: 03/07/2024
International UN CPC code 369
The International EPD® System
EPD International AB
www.environdec.com

In accordance with ISO 14025 and EN 15804

1 GENERAL INFORMATION

1.1 Name and address of the Manufacturer

OVATTIFICIO OLIMPIA DI ZORZATO ALBERTO & C.
Via S.Polo, 115 / A 35020 - S. Angelo di Piove (PD) Italy
Tel. +39 049 9793801 Fax +39 049 5846669
Website: **www.olimpiaitalia.com**

1.2 Product description and main components

ISOLIMPIA® is a thermally insulating material and an acoustic absorbent made of 100% thermobounded polyester fiber (Polyethylene terephthalate - Polyethylene terephthalate Co-polymer).

1.3 Functional unit

The functional unit of the study, in line with the objective, the field of application and the "2012 PCR: 01 ver 2.3, 2018-11-15" Construction products and construction services "Sub-PCR-I Thermal insulation products (EN 16783) ", is 1 m^2 of insulating panel with specific R-value (Thermal Resistance expressed in m^2K/W) usable according to the applications provided in Annex A of Standard EN 16783: 2017, with density 20 kg/m^3 and λ of 0,0389 W/m°K and with panel nominal thickness 20 mm, 50 mm and 100 mm.

1.4 Name of the program used

The International EPD® System
EPD International AB
Box 210 60
SE-100 31 Stockholm, Sweden
Email: info@environdec.com
www.environdec.com

1.5 System boundaries

The Analysis of the Life Cycle developed is of the "Cradle to Gate" type, A1-A3 (according to EN 16783: 2017).

1.6 Reference production site

The insulation is made only in the production site of S. Angelo di Piove (PD).

2 DESCRIPTION OF THE ORGANIZATION AND OF THE PRODUCT

2.1 Ovattificio Olimpia

Since 1971 Olimpia continues the evolution and the research dedicating the production to mattress felt and textile articles for the padding of mattresses and pillows. Since the eighties he has developed an important commercial network in European markets (in particular France, Germany, Austria and Switzerland), becoming in a few years a point of reference for companies dealing with mattresses, pillows and furniture.

The Company's potential has developed considerably when, at the end of the 1990s, Olimpia revolutionized its systems and promoted new investments, expanding the range of products and entering the thermo-acoustic insulation and filtration sector.

Products are certified according to the criteria set by the most important regulations in the textile sector. From safety to health, to the ecological compatibility of products, the efforts are aimed at offering increasingly safe and environmentally friendly products.

The Company has obtained ISO 9001: 2015 quality certification and is able to meet the needs of different national and European markets. Its registered and operational office is in S. Angelo di Piove in the province of Padua – Italy.

2.2 Technical characteristics of the product and composition

The composition of the product, net of packaging, consists of 100% polyester, of which about 70% of recycled PET from post-consumer white bottles and 30% of thermobonding virgin PET. The white polyethylene terephthalate fiber guarantees a constant diameter.
ISOLIMPIA® has been designed for building applications, as well as for the most common applications in the railway sector and for general and industrial uses.
The characteristic of the thermo-binding is the complete recyclability of the product and the cut-outs of its workings and for this reason ISOLIMPIA® can be considered to all intents and purposes 100% recyclable. On this characteristic, attention must be increasingly focused because, if recyclability does not affect ecological culture, it certainly concerns the cost of disposing of any clippings.
No less important is the fact that ISOLIMPIA® does not fray and does not disperse dust, particles or fibrils that are potentially harmful to humans in the environment.

Picture 1. Product images

It can be produced in different thickness and density variants, which allow it to meet the numerous technical performance requirements and to comply with current regulations both in terms of thermal insulation, sound insulation and reaction to fire.

Thickness	From 10 up to 100 mm +/- 5 mm
Fire reaction class	• Accordig to EN 13501-1: **Bs2d0** for density 20 kg/m^3 and thickness from 10 to 60 mm • According to italian regulation: **CL1** for density 10 and 40 kg/m^3 and thickness from 20 to 100 mm
Smoke class	according to AFNOR NF F16-101 for density 10 kg/m^3 and 40 kg/m^3: **F1 class**
Temperature range of use	From – 40°C up to +100 °C
Thermal conductivity	"λ"= 0,0389 [W/m°K] at density 20 kg/m^3
Fiber diameter	27,9 [µm] (calculated)
Lower calorific value	21600 [Kj/Kg]
Specific Heat	0,24 [Kj/Kg°K]

Table 1. Isolimpia technical features

The product does not contain substances present in "Candidate List of Substances of Very High Concern (SVHC) for authorization" in percentage higher than 0.1%.

3 DECLARATION OF ENVIRONMENTAL PERFORMANCES

3.1 Evaluation method

The quantification of environmental performance was carried out as required by the PCR Construction Products and Construction Services 2012: 01 version 2.3 valid until 2020-03-03 and Sub-PCR to PCR 2012: 01 dates 2018-11-16 thermal insulation products (EN 16783: 2017) according to the Life Cycle Analysis methodology (LCA - Life Cycle Assessment).

3.2 The declared unit

The functional unit of the study, in line with the objective, the field of application and the "2012 PCR: 01 ver 2.3, 2018-11-15" Construction products and construction services "Sub-PCR-I Thermal insulation products (EN 16783) ", is 1 m² of insulation panel with specific R-value (Thermal Resistance expressed in m²K/W), usable according to the applications provided in Annex A of Standard EN 16783: 2017, with density 20 kg/m^3 and λ of 0,0389 W/m°K and with nominal panel thickness 20 mm, 50 mm and 100 mm.

INPUT	λ [W/mK]	0,0389	0,0389	0,0389
	Density [kg/m^3]	20	20	20
	Thilkness [mm]	20	50	100
OUTPUT	Thermal resistance [m^{2}K/W]	0,51	1,29	2,57
	Need of material 1 m^2 [kg]	0,40	1,00	2,00

Table 2. Material requirement for 1 m^2 of insulation

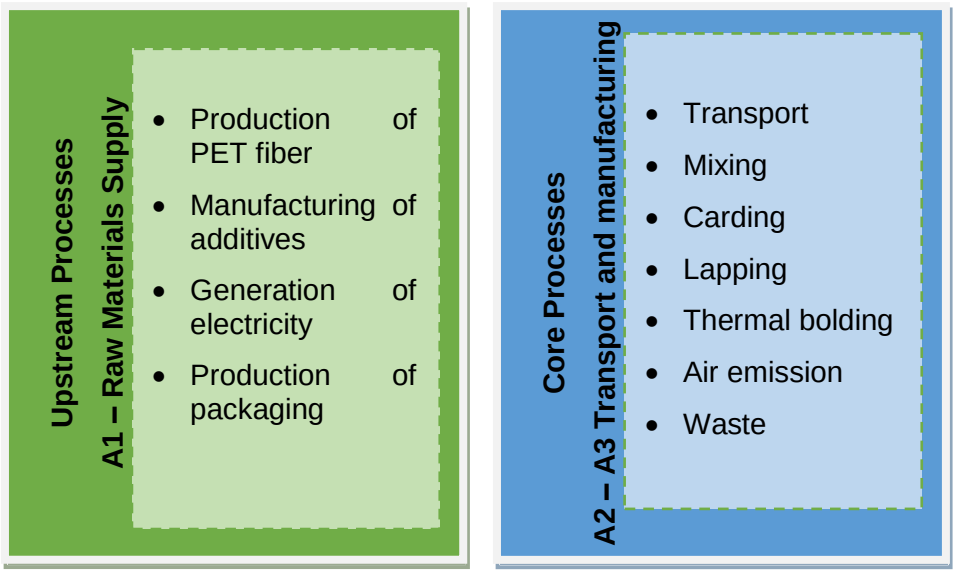
3.3 System boundaries

The developed LCA is of the "Cradle-to-gate" type (A1-A3).
Upstream Processes include phase A1 (extraction of raw materials and processing of semi-finished products).
Core Processes include phases A2 (transport to the factory) and A3 (production).

X= included MND = not included

Product stage			Construction process stage		Use stage					End of life stage				Benefit and load beyond system boundary
Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Deconstruction, demolition	Transport	Waste processing	Disposal	Reuse, recycling or energy recovery potentials
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	C4	D
X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

In case of selective demolition of buildings, the product can be recovered in its original form, and then recycled for the same use or sent to companies specialized in the recovery of polyester fiber.



Picture 2. ISOLIMPIA production scheme and system boundaries

The geographical representation of the study is Europe.

The use phase of the thermo-acoustic insulation of walls and roofs is associated with the duration of the building in which it is used, estimated for European countries around 50 years (as reported in EN 16783: 2017).

3.4 Cut-off and allocation criteria

Processes that contribute less than 1% of the total environmental impact for each impact category have been omitted from the inventory analysis.
The allocation between products and co-products is based on the mass principle.

3.5 Data quality

The LCA analysis was carried out with reference to the 2018 data, collected in the establishment of the Ovattificio Olimpia in S. Angelo di Piove (PD).
The analysis and monitoring of environmental performance took place using the SimaPro vs 9.0 software and the Ecoinvent vs 3.5 database.
The contribution of generic data on the final results is less than 1% for each impact category.
Taking into account the fact that the process considered takes place completely within the Italian territory, the data relating to the energy aspects refer to the energy mix of the Italian supplier, with the exception of the process of realization of some raw materials, for which it was made reference to the energy mix of the country of production.
Data collection was carried out according to the methods set forth in the ISO standard 14044, EN 15804 and EN 16783.

3.6 Product environmental profile

Environmental performance includes information on resource use, energy consumption, pollutant emissions over the entire life cycle of the product and potential environmental impacts. The following table shows information on resource consumption.

		Total consumption of resources per 1 m^2 of a panel with a thickness of 20 mm and with R 0,51 m2K/W			
Resource Use	**Unit**	**A1**	**A2**	**A3**	**TOTAL**
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ	0,703	0,025	0,085	0,813
Use of renewable primary energy resources used as raw materials	MJ	0,000	0,000	0,000	0,000
Total use of renewable primary energy resources	MJ	0,703	0,025	0,085	0,813
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ	9,861	1,208	2,199	13,268
Use of non-renewable primary energy resources used as raw materials	MJ	12,916	0,000	0,000	12,916
Total use of non-renewable primary energy resources	MJ	22,777	1,208	2,199	26,184
Use of secondary materials	MJ	0,000	0,000	0,000	0,000
Use of secondary renewable fuels	MJ	0,000	0,000	0,000	0,000
Uso di materiali secondari	kg	0,294	0,000	0,000	0,294
Uso di combustibili secondari rinnovabili	MJ	0,000	0,000	0,000	0,000
Use of secondary non-renewable fuels	MJ	0,000	0,000	0,000	0,000
Use of net fresh water	m^3	0,320	0,007	0,036	0,363

Table 3. Total consumption of resources per 1 m^2 of a panel with a thickness of 20 mm and with R = 0,51 [m^2K/W]

		Total consumption of resources per 1 m² of a panel with a thickness of 50 mm and with R 1,29 m² K/W			
Resource Use	**Unit**	**A1**	**A2**	**A3**	**TOTAL**
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ	1,756	0,062	0,213	2,031
Use of renewable primary energy resources used as raw materials	MJ	0,000	0,000	0,000	0,000
Total use of renewable primary energy resources	MJ	1,756	0,062	0,213	2,031
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ	24,654	3,019	5,498	33,170
Use of non-renewable primary energy resources used as raw materials	MJ	32,290	0,000	0,000	32,290
Total use of non-renewable primary energy resources	MJ	56,944	3,019	5,498	65,460
Use of secondary materials	MJ	0,000	0,000	0,000	0,000
Use of secondary renewable fuels	MJ	0,000	0,000	0,000	0,000
Uso di materiali secondari	kg	0,735	0,000	0,000	0,735
Uso di combustibili secondari rinnovabili	MJ	0,000	0,000	0,000	0,000
Use of secondary non-renewable fuels	MJ	0,000	0,000	0,000	0,000
Use of net fresh water	m^3	0,800	0,017	0,091	0,908

Table 4. Total consumption of resources per 1 m^2 of a panel with a thickness of 50 mm and with R = 1,29 [m^2K/W]

		Total consumption of resources per 1 m2 of a panel with a thickness of 100 mm and with R 2,57 m² K/W			
Resource Use	**Unit**	**A1**	**A2**	**A3**	**TOTAL**
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ	3,513	0,124	0,426	4,063
Use of renewable primary energy resources used as raw materials	MJ	0,000	0,000	0,000	0,000
Total use of renewable primary energy resources	MJ	3,513	0,124	0,426	4,063
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ	49,307	6,038	10,996	66,341
Use of non-renewable primary energy resources used as raw materials	MJ	64,580	0,000	0,000	64,580
Total use of non-renewable primary energy resources	MJ	113,887	6,038	10,996	130,921
Use of secondary materials	MJ	0,000	0,000	0,000	0,000
Use of secondary renewable fuels	MJ	0,000	0,000	0,000	0,000
Uso di materiali secondari	kg	1,470	0,000	0,000	1,470
Uso di combustibili secondari rinnovabili	MJ	0,000	0,000	0,000	0,000
Use of secondary non-renewable fuels	MJ	0,000	0,000	0,000	0,000
Use of net fresh water	m^3	1,600	0,035	0,181	1,816

Table 5. Total consumption of resources for 1 m^2 of Isolimpia with a thickness of 100 mm and with R = 2,57 [m^2K/W]

The results of the potential environmental impacts are shown in the following table.

		Total consumption of resources per 1 m^2 of a panel with a thickness of 20 mm and with R 0,51 m2K/W			
Potential environmental impacts	**Unit**	**A1**	**A2**	**A3**	**TOTAL**
Global Warming (GWP100a)	kgCO_2eq	1,026	0,078	0,067	1,171
Ozone layer depletion (ODP)	kg CFC 11 eq	0,000	0,000	0,000	0,000
Photochemical oxidation	kg C_2H_4 eq	0,000	0,000	0,000	0,000
Acidification of soil and water	kg SO_2 eq	0,004	0,002	0,001	0,006
Eutrophication	kg PO_4^{3-} eq	0,002	0,000	0,000	0,002
Abiotic depletion of resources-Elements	kg Sb eq	0,000	0,000	0,000	0,000
Abiotic depletion of resources-Fossil fuels	MJ	19,208	1,090	1,837	22,135

Table 6. Potential contribution to the main environmental effects for the production of 1 m^2 of Isolimpia with a thickness of 20 mm

		Total consumption of resources per 1 m^2 of a panel with a thickness of 50 mm and with R 1,29 m² K/W			
Potential environmental impacts	**Unit**	**A1**	**A2**	**A3**	**TOTAL**
Global Warming (GWP100a)	kgCO_2eq	2,564	0,196	0,167	2,927
Ozone layer depletion (ODP)	kg CFC 11 eq	0,000	0,000	0,000	0,000
Photochemical oxidation	kg C_2H_4 eq	0,001	0,000	0,000	0,001
Acidification of soil and water	kg SO_2 eq	0,010	0,004	0,002	0,015
Eutrophication	kg PO_4^{3-} eq	0,004	0,000	0,000	0,005
Abiotic depletion of resources-Elements	kg Sb eq	0,000	0,000	0,000	0,000
Abiotic depletion of resources-Fossil fuels	MJ	48,020	2,725	4,593	55,338

Table 7. Potential contribution to the main environmental effects for the production of 1 m^2 of Isolimpia with a thickness of 50 mm

		Total consumption of resources per 1 m2 of a panel with a thickness of 100 mm and with R 2,57 m² K/W			
Potential environmental impacts	**Unit**	**A1**	**A2**	**A3**	**TOTAL**
Global Warming (GWP100a)	kgCO_2eq	5,129	0,392	0,333	5,854
Ozone layer depletion (ODP)	kg CFC 11 eq	0,000	0,000	0,000	0,000
Photochemical oxidation	kg C_2H_4 eq	0,001	0,000	0,000	0,001
Acidification of soil and water	kg SO_2 eq	0,020	0,008	0,003	0,031
Eutrophication	kg PO_4^{3-} eq	0,009	0,001	0,001	0,011
Abiotic depletion of resources-Elements	kg Sb eq	0,000	0,000	0,000	0,000
Abiotic depletion of resources-Fossil fuels	MJ	96,040	5,450	9,187	110,677

Table 8. Potential contribution to the main environmental effects for the production of 1 m^2 of Isolimpia with a thickness of 100 mm

	Waste production	Hazardous waste	Non-hazardous waste	Radioactive waste
	Unit	kg	kg	kg
Total consumption of resources per 1 m2 of a panel with a thickness of 20 mm and with R 0,51 m2K/W	A1	0,000	0,020	0,000
	A2	0,000	0,000	0,000
	A3	0,000	0,025	0,000
	TOTAL	0,000	0,045	0,000
Total consumption of resources per 1 m2 of a panel with a thickness of 50 mm and with R 1,29 m² K/W	A1	0,000	0,050	0,000
	A2	0,000	0,000	0,000
	A3	0,000	0,063	0,000
	TOTAL	0,000	0,113	0,000
Total consumption of resources per 1 m2 of a panel with a thickness of 100 mm and with R 2,57 m² K/W	A1	0,000	0,100	0,000
	A2	0,000	0,000	0,000
	A3	0,000	0,126	0,000
	TOTAL	0,000	0,226	0,000

Table 9. Total production of hazardous, non-hazardous and radioactive waste associated with the production of 1 m^2 of Isolimpia with a thickness of 20-50-100 mm

4 ADDITIONAL INFORMATION

Isolimpia contributes to the credits for the most important systems for assessing the sustainability of the building, including LEED, and the Minimum Environmental Criteria adopted by Decree of the Minister of the Environment for the Protection of the Territory and the Sea. Insulating panels do not contain flame retardants subject to restrictions and do not contain lead catalysts.

5 INFORMATION ON THE ORGANIZATION AND CERTIFICATION AGENCY

Contacts

OVATTIFICIO OLIMPIA DI ZORZATO ALBERTO E C.
Via S.Polo, 115/A 35020 – S. Angelo di Piove (PD) Italia
Tel. +39 049 9793801
Fax +39 049 5846669
Eng. Giorgio Michelotto, e-mail giorgio.michelotto@isolimpia.it

Further information

This EPD and the PCR of reference are available on the website www.environdec.com.
EPD of construction products are not comparable if they do not comply with EN 15804.
EPD belonging to the same product category but deriving from different programs may not be comparable. The EPD owner has the sole ownership, liability, and responsibility for the EPD.
The LCA study and this EPD were written by Ing.Francesca Intini with the technical scientific support of the University of Basilicata.

CEN standard EN 15804 served as the core PCR	
PCR:	PCR 2012:01 Construction products and construction services v. 2.3 Sub-PCR-I Thermal insulation products
PCR review was conducted by:	The Technical Committee of the International EPD® System. Chair: Filippo Sessa Contact via info@environdec.com
Independent verification of the declaration and data, according to ISO 14025::	☐ EPD di processo ☒ Verifica EPD
Third party verifier:	Adriana Del Borghi delborghi@tetisinstitute.it
Accredited or approved by:	Technical Commitee of “The International EPD® System”

6 REFERENCES

1. Life Cycle Assessment (LCA) ISOLIMPIA® Isolante termoacustico in poliestere, rev 1.2 July 2019.
2. General Programme Instructions for the International EPD® System, ver 3.0. Available at www.environdec.com.
3. PCR 2014:13 Insulation Materials, ver. 1.2, 2017-04-11. www.environdec.com
4. ISO 14040:2006, Environmental management - Life cycle assessment - Principles and framework.
5. ISO 14025:2006 Type III – Environmental labels and declarations – Type III environmental declaration – Principles and procedures.
6. ISO 21930, Environmental declaration of building products.
7. EN 15804:2012+A1:2013, Sustainability of construction works — Environmental product declarations
8. UNI EN 16783 Isolanti Termici – Regole quadro per categoria di prodotto (PCR) per prodotti ottenuti in fabbrica e realizzati in sito per la preparazione di dichiarazioni ambientali di prodotto
9. Sub-PCR-I Thermal insulation products (EN 16783).